Nevada Test Site, Frenchman Flat Test Facility, **HAER No. NV-37-A**
Main Switching Bunker (Concrete Building No. F-370)
Area 5, Frenchman Flat
Intersection of 5-03 Road and Short Pole Line Road
Mercury Vicinity
Nye County
Nevada

HAER
NEV
12-MERC.V,
2A-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, California 94107

HAER
NEV
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HISTORIC AMERICAN ENGINEERING RECORD

NEVADA TEST SITE, FRENCHMAN FLAT TEST FACILITY,

MAIN SWITCHING BUNKER (CONCRETE BUILDING NO. F-370)

HAER No. NV-37-A

Location: The F-370 Building is located near Frenchman dry lake bed at the intersection of 5-03 Road and Short Pole Line Road on Frenchman Flat, Area 5, Nevada Test Site. The structure is on the west side of Frenchman dry lake bed near the 3100 ft (945 m) contour. It is approximately 9 mi (14.5 km) north of Mercury, Nye County, Nevada.

USGS Frenchman Lake (1986) 7.5' Quadrangle
Universal Transverse Mercator Coordinates: 11. 592260. 4073010

Present Owner: U.S. National Nuclear Security Administration,
Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89139-8518

Present Use: Vacant

Significance: The F-370 Building has been determined eligible to the National Register of Historic Places because of its association with historical events of exceptional importance. This poured-concrete structure was a signal switching station constructed to provide housing for electrical equipment that supported the timing and firing aspects of nuclear weapons testing. Today, it provides a link between the U.S. nuclear weapons testing programs and the infrastructural support required by the establishment of an atomic weapons test site.

PART 1. HISTORICAL INFORMATION

A. Physical History

1. Date of erection: The F-370 Building was erected in 1951 during the construction project code named "Mercury"that established the infrastructure for the Nevada Test Site (NTS). This time frame is based on technical reports by Grier (1952, 1953 and 1954).

2. Architect/Designer: Engineering records are not definitive on this issue. The Silas Mason Company (1953, 1954) of Las Vegas produced numerous scientific site plans of Frenchman Flat that show the presence of the F-370 Building in the early 1950s. Several of these site plans were produced by Holmes and Narver, Inc. (H&N) and Silas Mason Company (1954a and b). Both companies produced design drawings for other early 1950s buildings and structures in Frenchman Flat (aka Area F; thus the designation "F-370"). To date, the earliest engineering record of the F-370 Building is a plan and sections view that dates to 1958 (H&N 1958).

   H&N was established in 1932 in Los Angeles, California following the Long Beach earthquake of that same year. H&N obtained numerous defense contracts during World War II (WW II), including the building of Camp Roberts and the construction of military facilities on Okinawa. After WW II, the Atomic Energy Commission (AEC) designated H&N as the architect and operator of the atomic testing facilities in the Pacific. They built the test sites on Enewetok and Bikini as well as providing all the camp services. In 1956, H&N took over the NTS engineering contract from the Silas Mason Company. Initially, H&N maintained only a small field office at the NTS with the major engineering support coming out of the Los Angeles office. Between 1958 and 1960, H&N established a design division in Las Vegas on Main Street. H&N still maintains a Las Vegas office at 1515 E. Tropicana Avenue. No other information is known about the individual designer.

3. Original and subsequent owners: The property on which the F-370 Building sits was originally part of the U.S. Air Force's Las Vegas-Tonopah Bombing and Gunnery Range. On December 21, 1951, the Nevada Proving Ground was established when the AEC entered into a lease agreement with the Air Force to use a 600+-square-mile portion of the gunnery range for nuclear testing. Public Land Order 805 made this arrangement permanent on February 19, 1952. Since that time the land has been administered by the AEC and its successors. The AEC continued to administer the land until 1974 when the Energy Research and Development Administration (ERDA) took its place. With the passage of the Department of Energy Organization Act in August 1977, control of the test site passed to the Department of Energy (DOE). In 2001, the Nevada Operations Office of DOE was designated the National Nuclear Security Administration, Nevada Operations Office (NNSA/NV) and continues to administer the property today.

4. Builder, contractor, suppliers: The actual builder of the F-370 Building has not been determined, but it is likely that the firm of Lembke, Clough and King, Inc. was responsible. According to an article appearing in the Las Vegas Review-Journal, they "built a great many of the buildings and structures in the classified areas, as well as the entire facilities at Camp Mercury, ..." (Anonymous 1953). Information on individual suppliers is not known.

5. Original plans and construction: The original plans for the F-370 Building can be gleaned from technical reports by Grier (1952, 1953 and 1954); construction documents indicate little change over the life of the structure (H&N 1958). It consists of a one-room, windowless structure made of poured concrete and measures 14 ft (4.3 m) north-south x 16 ft (4.9 m) east-west and 7 ft, 6 in (2.3 m) tall. The roof is a concrete slab. Entry is through a metal blast door located on the west elevation. Inside, signal cable access is provided by twelve 3-in (7.6-cm) diameter conduits that run under the concrete footings. Electrical switching cabinets, boxes, etc. are located against the walls.

6. Alterations and additions: None.

B. Historical Context

Personnel with the U.S. Government's atomic weapons operations first became interested in Frenchman Flat during a search for a potential continental nuclear weapons test ground. Following evidence of information leaks to Russian nationals, the U.S. Atomic Energy Commission (AEC) recognized the need for a continental test site that was remote from populated areas and within federal jurisdiction. The Joint Chiefs of Staff initiated Project Nutmeg which, according to Tlachac (1991:25-5), identified five potential sites: the Las Vegas-Tonopah Bombing and Gunnery Range; a 55-mile strip of land between Fallon and Eureka, Nevada; Alamogordo/White Sands, New Mexico; Dugway Proving Grounds, Utah; and Pamlico Sound/Camp Lejeune, North Carolina.

The AEC at first determined that a continental test site was not considered desirable. Physical problems coupled with political implications, both domestic and international, were serious enough to postpone consideration of a continental test site (Dean 1950). However, in March 1949, Sumner T. Pike of the Joint Committee on Atomic Energy stated that only a national emergency could justify testing within the United States and that Korea had fulfilled that condition. Following Pike's statement, AEC Commissioner Gordon E. Dean suggested that the AEC join with the U.S. Department of Defense (DoD) to resume a search for a continental test site (Hewlett and Duncan 1972:535). It was agreed that the DoD would join the AEC in a survey to locate at least one site and one possible alternate site. In addition, because it was a major concern to maintain security and public relations during the development of a plan for the continental site, Dean suggested "that a high degree of security be enjoined on the surveying party

to prevent undue speculation, opposition, or apprehension in the area to be examined" (Dean 1950).

The Las Vegas Bombing and Gunnery Range was selected over the other areas because of its low population density, favorable prevailing winds (easterly, away from the populous West Coast), and largely flat terrain (Ball 1986). Official approval of approximately 680 square miles for the site came on December 18, 1950. This area was known as the Nevada Proving Ground until 1955 when it became the NTS. Less than one month later, construction began under the codename "Project Mercury." Project Mercury established the infrastructure and support facilities for the new test site. Construction began at seven main areas almost simultaneously. In Frenchman Flat, construction centered on preparing for Operation Ranger.

The schedule followed for this first nuclear weapon test series was ambitious. Presidential approval to conduct the Operation Ranger series was given on January 11, 1951 and the first test commenced on January 27, 1951. During the ten days that followed, an additional four devices were detonated at the new test site. All were airdropped and produced blast yields from I to 22 kt (U.S. Department of Energy, Nevada Operations Office 2000).

After Operation Ranger, planning began for the second series, Operation Buster, conducted during October and November of 1951. The initial test, Able, was the first tower-supported detonation in the continental United States since the Trinity test. It was detonated on October 22, 1951. With some uncertainty over the effects of tower tests, this device was designed to produce a small yield of less than 0.1 kt.

During Operation Buster, Army troops participated in Desert Rock I training exercises, using gun emplacements, bunkers, and foxholes. These were not occupied during detonation, but were used for training exercises immediately after the test. The training programs continued during Operation Jangle and were labeled Desert Rock II and III. Included in the field were compasses, canned rations, perishable rations, medical supplies, gas masks, machine guns, rifles, telephones, radios, dummies clad in various types of uniforms, tents, wire, jeeps, trucks, tanks, artillery pieces and a "Bailey" bridge (U.S. Army 1951:45-48, 167-171). At the conclusion of Operation Jangle, the first calendar year of testing at the NTS had also ended. This 10 month period included 12 detonations with combined yields of approximately 112 kt (U.S. Department of Energy, Nevada Operations Office 2000).

Testing continued on Frenchman Flat during subsequent years with the exception of a moratorium that was observed from 1958 - 1961. The Limited Test Ban Treaty of 1963 prohibited atmospheric, underwater, and outer space nuclear testing, however, underground testing was allowed to continue until 1992 when the current moratorium prohibited all testing. To date, 14 atmospheric nuclear weapons tests have been conducted on Frenchman Flat along with five underground tests.

The F-370 Building operated from 1951 to at least 1958 on Frenchman Flat on the NTS (Figures 1 and 2). Infrastructural properties are those buildings and structures that allow for development of the intended purpose of the NTS. These include roads, water lines, electrical and communication bunkers, etc.

This building operated with other timing and firing stations to provide millisecond-accuracy zero time signals in support of the nuclear weapons testing program. It should be noted that it is considered to be in good condition and that it was located at a distance where it was relatively unaffected by the nuclear weapons tests conducted on the dry lake bed.

PART II. ARCHITECTURAL INFORMATION

A. General Statement

1. Architectural character: Functional requirements dictated size and general character. Beck et al. (1996) have used the term NTS vernacular to describe these types of buildings.

2. Condition of fabric: Original concrete walls indicate some weathering but little or no structural damage.

B. Description of Exterior

1. Overall dimensions: The F-370 Building has a footprint measuring14 ft (4.3 m) north-south x 16 ft (4.9 m) east-west and 7 ft, 6 in (2.3 m) tall. The roof is concrete slab.

2. Foundations: The structure is built on 5-ft (1.5-m) thick concrete footers.

3. Walls: Reinforced concrete measuring 1-ft (0.3-m) thick.

4. Structural system, framing: Described walls (above) serve as structural system.

5. Porches, stoops, balconies, bulkheads: None.

6. Chimneys: None.

7. Openings:

a. Doorways and doors: A doorway and door is located on the west elevation of the building and provides access to the electrical equipment housed inside. The doors measure 3 x 7 ft (1 x 2.1 m). It is a metal blast door on hinges.

b. Windows and shutters: None.

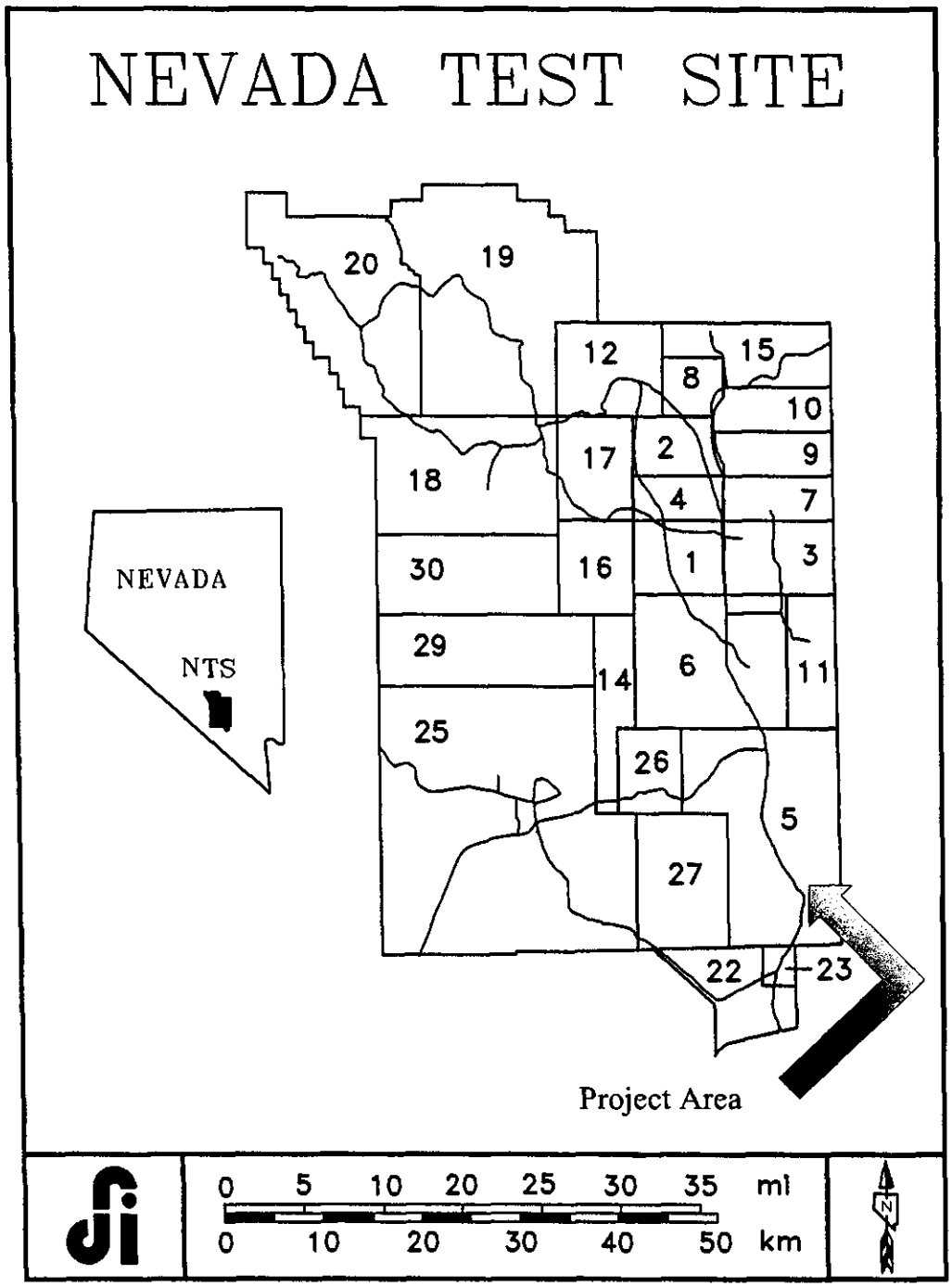


Figure 1. Location of F-370 Building on the NTS.

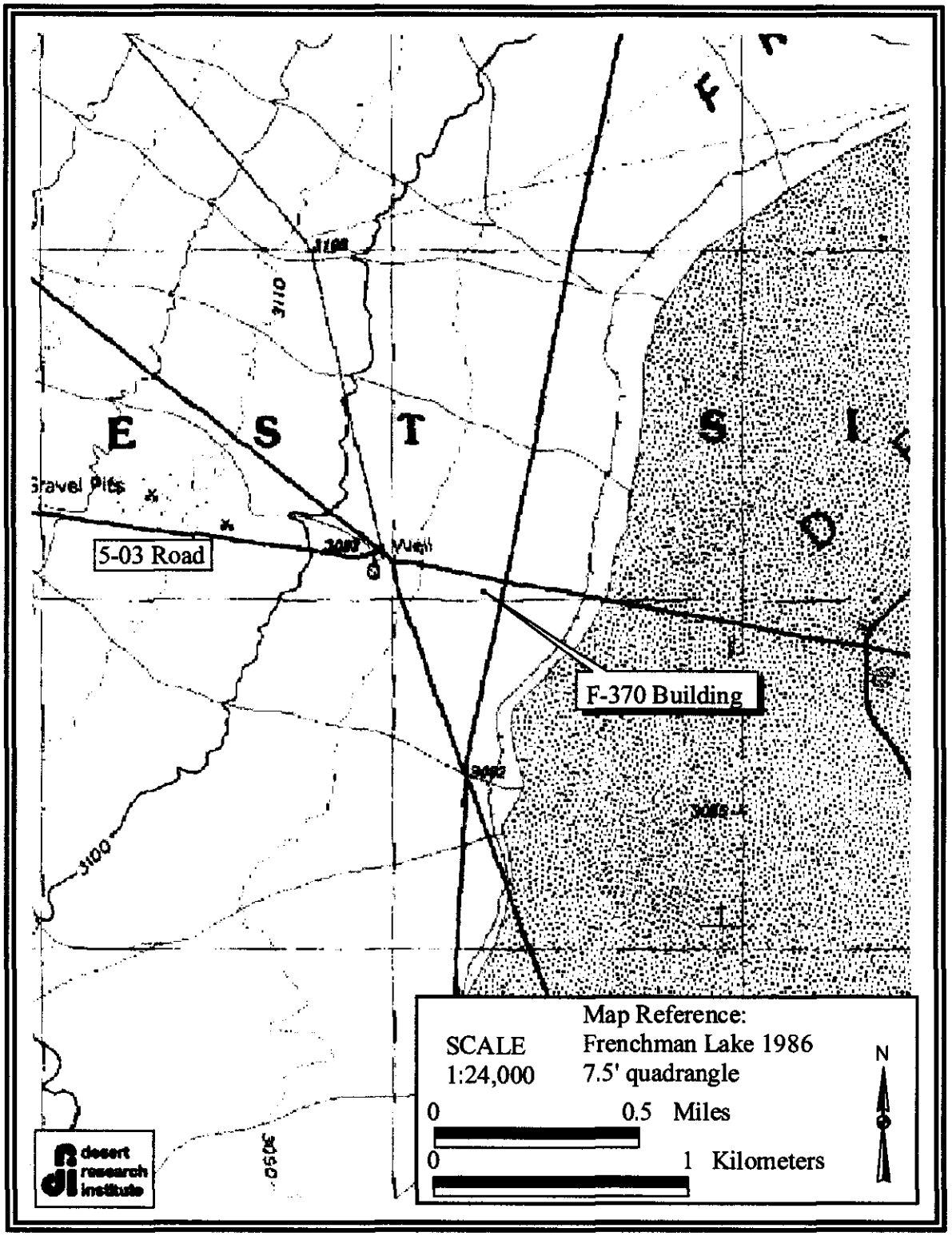


Figure 2. Location of F-370 Building on Frenchman Flat.

8. Roof: The F-370 Building has a slab roof.

   a. Shape, covering: Flat, no covering.

   b. Cornice, eaves: None.

   c. Dormers, cupolas, towers: None.

C. Description of Interior

1. Floor plans:

   a. Basement: None.

   b. First floor: The interior is simple. It is a single room measuring 12 x 14 ft (3.7 x 4.3 m).

   c. Second floor: None.

2. Stairways: None.

3. Flooring: Unfinished concrete.

4. Wall and ceiling finish: None.

5. Openings: No interior doorways. Door opening described for exterior has no internal trim.

6. Decorative features and trim: None

7. Hardware: None

8. Mechanical equipment:

   a. Heating, air conditioning, ventilation: No heating. No air conditioning. No ventilation.

   b. Lighting: Overhead incandescent bulbs with baked-enamel shades.

   c. Plumbing: None.

D. Site

1. General setting and orientation: The F-370 Building is located along the Short Pole Line Road approximately 9 mi (14.5 km) north of Mercury in Area 5 of the Nevada Test Site (NTS). This area is in the southern half of Frenchman Flat. Sediments in this area are mostly alluvial, as tributary streams erode the surrounding mountains and deposit sediments in Yucca Flat. Fernald et al. (1968) indicate they are late Pleistocene and Holocene

age deposits. The elevation is approximately 3100 ft (1036 m). The terrain slopes gently (2-4 percent) to the dry lake bed.

2. Historic landscape design: None.

3. Outbuildings: None.

PART III. SOURCES OF INFORMATION

A. Original Architectural Drawings

Holmes and Narver, Inc. 1958, Plan and Sections, Station F-370. Microfiche on file, drawing no. BD-F-370-1, Archives and Records Center (formerly the Engineering Records Library), Mercury, NV. [plan and section views of the F-370 Building]

Holmes and Narver, Inc. and Silas Mason Company 1954a, Scientific Site Plan, Area F. Microfiche on file, drawing nos. 005-002-C67, Archives and Records Center (formerly the Engineering Records Library), Mercury, NV. [site layout for the infrastructural facilities and target properties on Frenchman Flat]

Holmes and Narver, Inc. and Silas Mason Company 1954b, Scientific Site Plan, Area F. Microfiche on file, drawing nos. 005-002-C64, Archives and Records Center (formerly the Engineering Records Library), Mercury, NV. [site layout for the infrastructural facilities and target properties on Frenchman Flat]

Silas Mason Company 1953, Area F, Station Layout. Microfiche on file, drawing no. NTS 324-S4, Archives and Records Center (formerly the Engineering Records Library), Mercury, NV. [site layout for the infrastructural facilities and target properties on Frenchman Flat]

Silas Mason Company 1954, Scientific Site Plan, Area F. Microfiche on file, drawing no. JS-005-002-C66, Archives and Records Center (formerly the Engineering Records Library), Mercury, NV. [site layout for the infrastructural facilities and target properties on Frenchman Flat]

B. Early Views: None.

C. Interviews: One interviews was conducted with a knowledgeable informant that is associated with the F-370 Building. He is Mr. Alfred E. O'Donnell.

1. Al O'Donnell was interviewed on site in 1998. His association with the F-370 Building comes from his employment with the timing and firing team with Edgerton, Germeshausen and Grier, Inc. (EG&G) when the NTS opened in 1951. He was involved in the Ranger series, Upshot-Knothole and most, if not all, atmospheric tests that were fired in Frenchman Flat.

D. Bibliography: The extent of published materials concerning the F-370 Building is minimal. Archived materials were researched at the CIC Library in Las Vegas, BN's Remote Sensing Laboratory photographic services in Las Vegas and the Archives and Records Center (formerly the Engineering Records Library) in Mercury at the NTS. The following list is based on those publications that were useful during historical and documentary research at the site.

Anonymous
1953 "Lembke, Clough, King Firm Widely Known in West," *Las Vegas Review-Journal*, September 27.

A newspaper article that details the business of the contracting firm of Lembke, Clough and King in the West in general and specifically at the NTS.

Ball, H.
1986 *Justice Downwind: America's Testing Program in the 1950s*. Oxford University Press, New York.

This book provides an overview of the nuclear testing program from the view of downwinders.

Beck, Colleen M., Nancy Goldenberg, William Gray Johnson and Clayton Sellers
1996 *Nevada Test Site Historic Building Survey*. Desert Research Institute, Quaternary Sciences Center Technical Report No. 87 (prepared jointly with Carey and Company for the Department of Energy, Nevada Operations Office), Las Vegas, Available through the Office of Scientific and Technical Information, Oak Ridge.

This is a technical report. It provides a sketch of the history of the Nevada Test Site and identifies structures and buildings likely to be important in the development of historic districts on the NTS.

Dean, Gordon
1950 Draft Memorandum to the Chairman, MLC, CIC Library, document number 30429, Las Vegas.

This memo details Dean's views on the establishment of a continental test site.

Fernald, A.T., G.S. Corchary and W.P. Williams
1968 Surficial geologic map of Yucca Flat, Nye and Lincoln Counties, Nevada. *U.S.G.S. Miscellaneous Geological Investigations Map* I-550.

Map that details sediments on Yucca Flat and nearby areas.

Grier, Herbert E
1952 Operation Buster-Jangle: Timing and Firing. Edgerton, Germeshausen and Grier, Inc. WT-419, Boston, also available at the CIC Library, document number NV0310253, Las Vegas.
1953 Operation Tumbler-Snapper: Timing and Firing. Edgerton, Germeshausen and Grier, Inc. WT-561, Boston, also available at the CIC Library, document number NV0306345, Las Vegas.
1954 Operation Upshot-Knothole: Timing and Firing. Edgerton, Germeshausen and Grier, Inc. WT-806, Boston, also available at the CIC Library, document number NV0058979, Las Vegas.

These technical reports provide information on timing and firing activities associated with nuclear weapons tests. Cross referencing between the reports indicates the F-370 Building is present during Operation Buster-Jangle.

Hewlett, Richard G. And Francis Duncan
1972 *Atomic Shield: A History of the United States Atomic Energy Commission, Volume II.* U.S. Atomic Energy Commission, Washington D.C., reprinted from original 1969 edition, also available at the CIC Library, Las Vegas, document no. NV0034749.

A book that provides historical information on the activities of the U.S. Atomic Energy Commission.

Johnson, William Gray, Barbara A. Holz and Robert Jones
2000 A Cold War Battlefield: Frenchman Flat Historic District, Nevada Test Site, Nye County, Nevada, Desert Research Institute, Division of Earth and Ecosystem Sciences Cultural Resources Technical Report No. 97, Las Vegas.

This is a technical report. It provides historical context and justification for the National Register eligibility of the F-370 Building.

Tlachac, E.
1991 Nuclear Testing. In *Nevada Comprehensive Preservation Plan*, edited by W.G. White, R.M. James, and R. Bernstein, pp. 25-3 - 25-24. Nevada Division of Historic Preservation, Carson City.

A planning document, it is a technical report developed by the state of Nevada to identify themes and properties considered important to the history of the state.

U.S. Army
1951 Exercises Desert Rock II and III, General Plan. Sixth U.S. Army, Headquarters, Camp Desert Rock, Nevada.

A planning document, it details the activities of military participation in nuclear weapons tests during the mid 1950s.

U.S. Department of Energy
2000 *United States Nuclear Tests: July 1945 through September 1992*, U.S. Department of Energy, Nevada Operations Office, DOE/NV-209 (Rev. 15), Las Vegas.

This is a technical report that provides the names, dates and other pertinent information about nuclear weapons tests conducted by the U.S. government.

E. Likely Sources Not Yet Investigated: None.

F. Supplemental Material: See Attachment A for early engineering records.

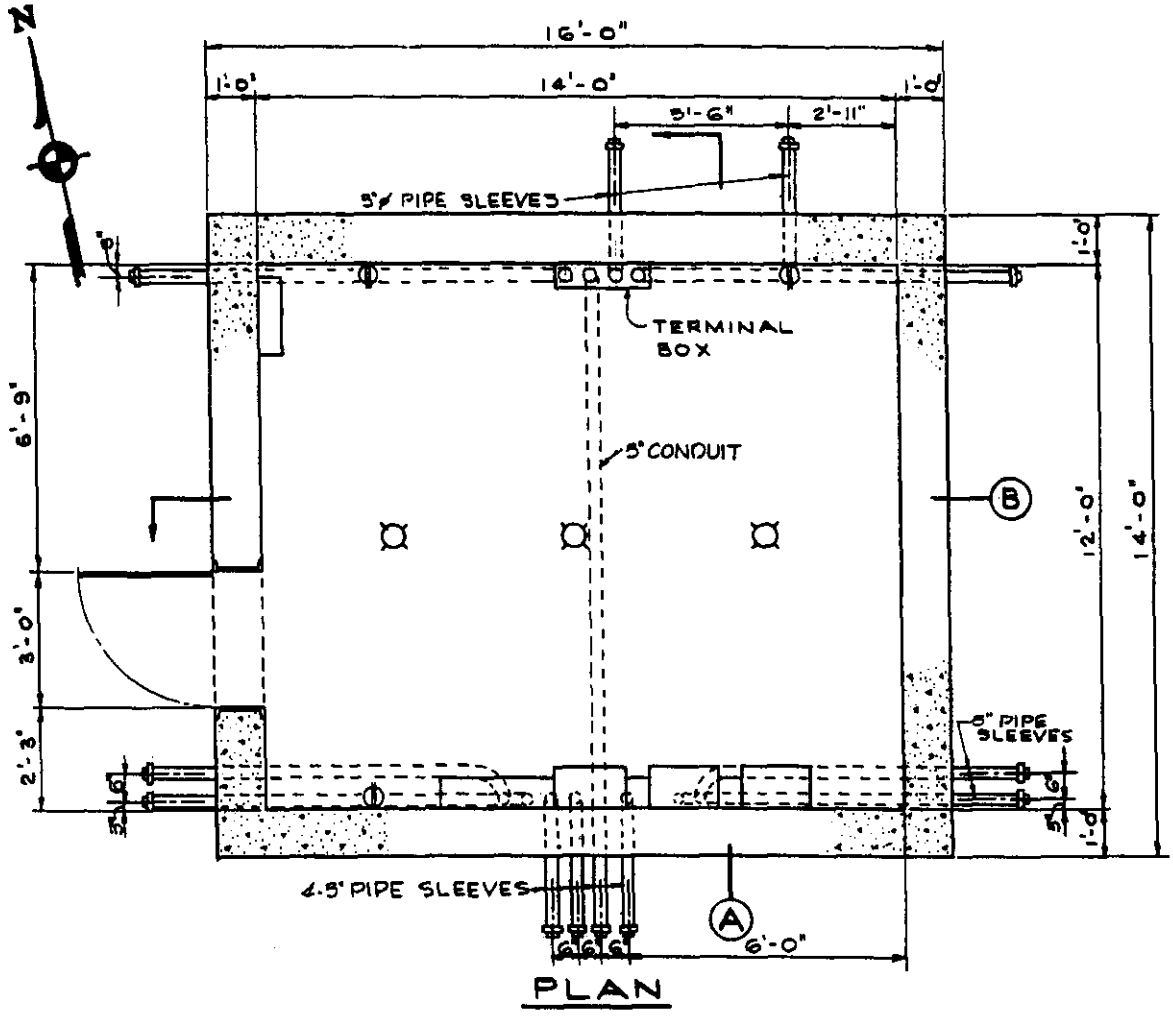
PART IV. PROJECT INFORMATION

This is a mitigative recording project required by a Memorandum of Agreement (MOA) promulgated by the National Nuclear Security Administration, Nevada Operations Office (NNSA/NV) and agreed to by the Nevada State Historic Preservation Office. The MOA recognizes that demolition activities will result in an adverse effect to the structures. Stipulations of the MOA are 1) NNSA/NV ensures that HABS/HAER documentation, as recommended by the Western Regional Office of the National Park Service (NPS), will be completed for this structure and approved by the NPS within six months of the date of the last signatory of the MOA, 2) copies of the HABS/HAER documentation will be sent to the Nevada State Historic Preservation Office in Carson City and the Nevada State Museum and Historical Society in Las Vegas and 3) a copy of the fully executed MOA and DRI'S Technical Report 97 will be sent to the Advisory Council on Historic Preservation in accordance with 36 C.F.R. 79, Part 800.6(b)(1)(iv).

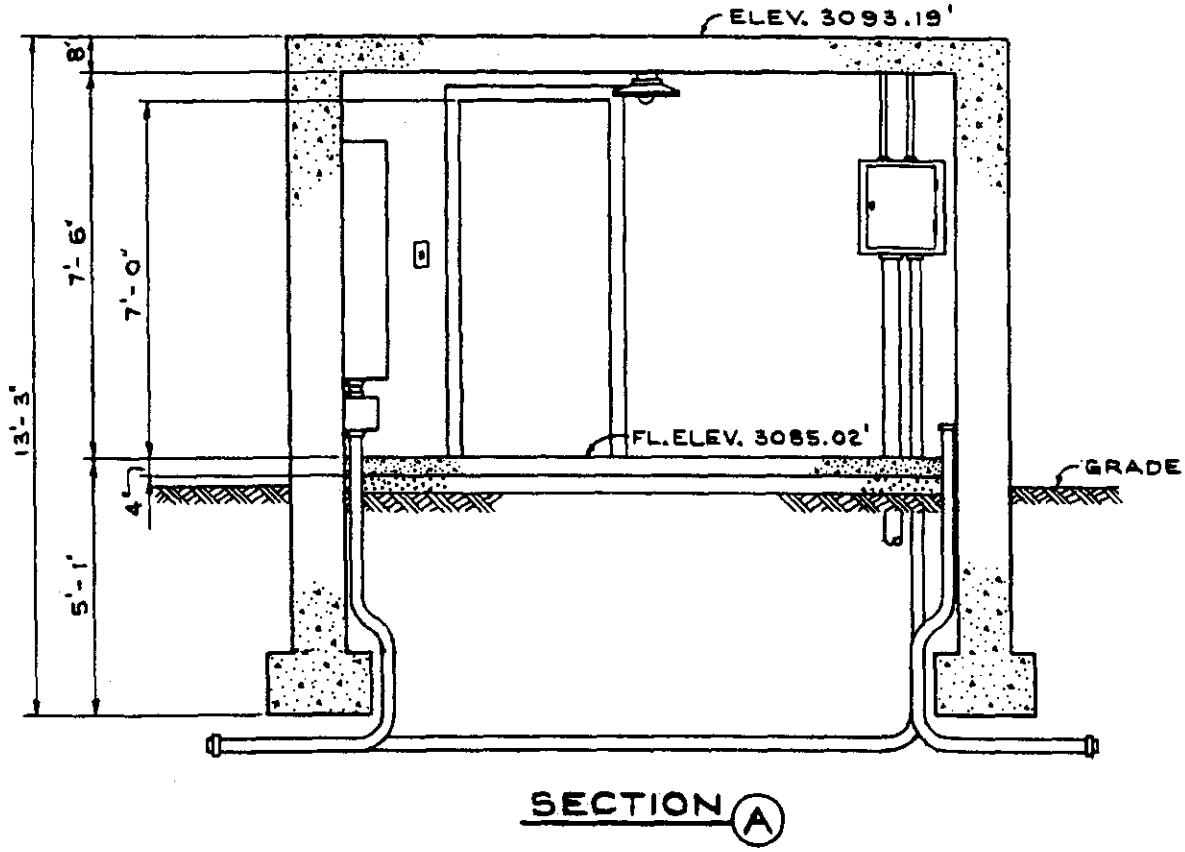
Authors: William Gray Johnson
Desert Research Institute
755 E Flamingo Road, Las Vegas, NV 89119

Date: July 9, 2001

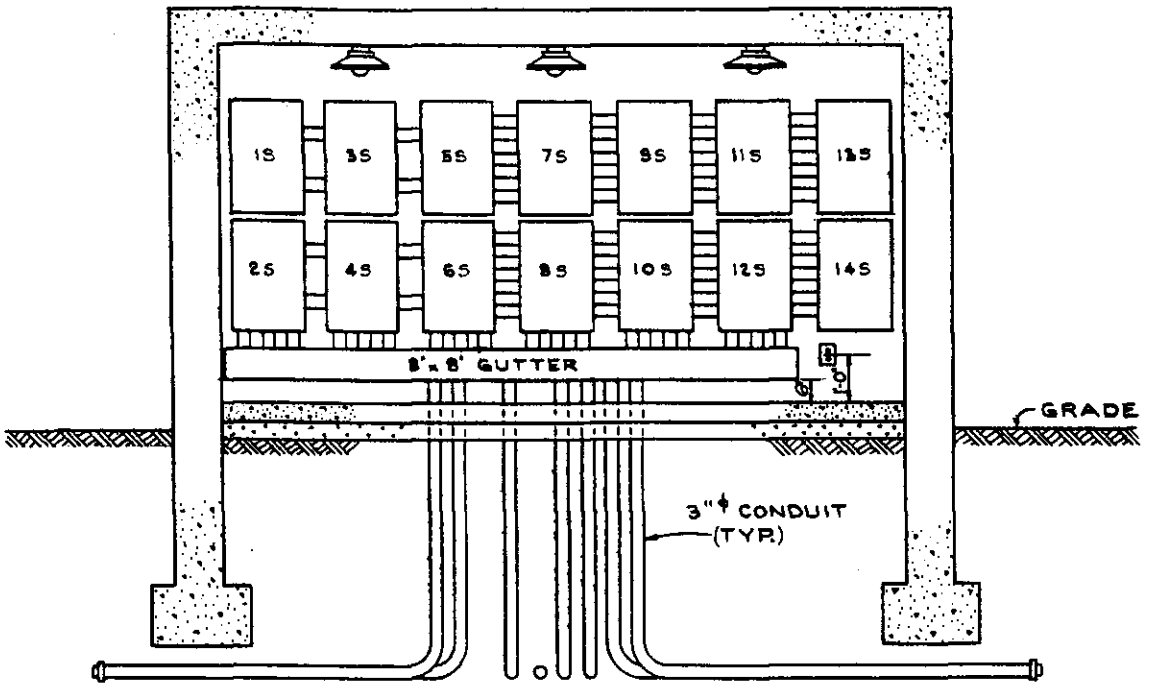
ATTACHMENT A
EARLY ENGINEERING RECORDS



Engineering record of "Plan and Sections, Station F-370, Area F," Holmes and Narver, 4-1-58, BD-F-370-1, plan view (best copy available).



Engineering record of "Plan and Sections, Station F-370, Area F," Holmes and Narver, 4-1-58, BD-F-370-1, section A view (best copy available).



SECTION (B)

Engineering record of "Plan and Sections, Station F-370, Area F," Holmes and Narver, 4-1-58, BD-F-370-1, section B view (best copy available).